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THE EFFECT OF COMPOSITION ON YIELD OF MIXED-CONIFER STANDS IN THE SIERRAS

By
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In the even-aged, second-growth, mixed-conifer type of the Sierras, composed of western yellow pine, sugar pine, Douglas fir, white fir, and incense cedar, in varying proportions, the presence of western yellow and sugar pines tends to make the yield greater than the average. The presence of Douglas fir tends toward yields below the average.

These conclusions are the result of a detailed analysis of 225 sample plots measured by D. Dunning, and others, in the Sierras of California. The plots represented all proportions of species, and their ages ranged from 45-90 years, the majority between 45-60 years. Average yield (as indicated by total basal area) was first determined and departures from this average were then correlated with species proportions. The following table indicates the average composition of various types, and shows the yield in per cent of average yield, for stands 50-60 years old and of average site quality.

Type	Western yellow pine	Sugar pine	Douglas fir	White fir	Incense cedar	% of Average yield
	per cent of total basal area					
Sugar pine	10.3	59.2	6.4	9.6	14.5	113
Western yellow pine	76.9	3.0	5.4	5.3	9.4	111
Western yellow pine-sugar pine	39.2	36.8	3.6	9.6	10.8	110
Western yellow pine-white fir	40.0	3.5	8.7	34.3	13.5	105
Sugar pine-white fir	1.2	28.5	3.5	62.0	4.8	103
White fir	2.7	2.9	10.0	81.2	3.2	102
Douglas fir-white fir	7.5	3.1	44.5	43.2	1.7	96
Douglas fir	8.8	2.8	78.9	8.6	0.9	88
Average, all plots	24.8	8.2	36.1	24.7	6.4	100

This table shows that with high percentages of sugar and western yellow pines the yield is 10-13 per cent above average; stands high in white fir are about average, while pure Douglas fir stands are 12 per cent below average. For the average compositions shown, the range in yield is 25 per cent (113-88); this range is greater if pure stands are considered. For 100 per cent western yellow pine and 100 per cent Douglas fir the yield would be 123 per cent and 75 per cent respectively, a range of 48 per cent.